User Manual
Rackmount Systems

Models: RM5100, RM7100,
RM7200, RM7400

Important

Please keep the packing materials and shipping carton.
This carton has been specially designed to protect the computer during shipping, including shipping for upgrades or repairs to Spectral Computers (we also recommend that you insure the contents). Please contact Spectral Computers for a return authorization number to ensure proper handling and tracking of your computer.

Important Safety Instructions
The following instructions refer to risks of electrical shock, fire or bodily injury. Please read all the instructions carefully.

1. Read all instructions marked on the product and in the documentation before operating your Spectral Computer.
2. Retain all safety and operating instructions.
3. Never use this product near water or a heat source.
4. Only set up the computer on a stable work surface.
5. Only operate the computer using the power source type indicated on the rating label.
6. If the computer has a voltage selector switch located on the back of the chassis, ensure that the switch is set to the proper voltage setting for your area.
7. Do not block or cover fan grill or air vents.
8. Never insert objects of any kind into the ventilation openings.
9. Make sure the computer is properly grounded when in use. Do not attempt to plug the computer into an outlet that is not properly grounded.
10. If an extension cord is used with your computer, ensure that the total ampere rating on the computer does not exceed the maximum rating on the extension cord.
11. Do not step or place any objects on the power cord.
12. Do not spill anything on or into the computer.
13. To avoid electrical shock, always unplug all power, modem, and any other cables from the wall outlets before handling the computer.

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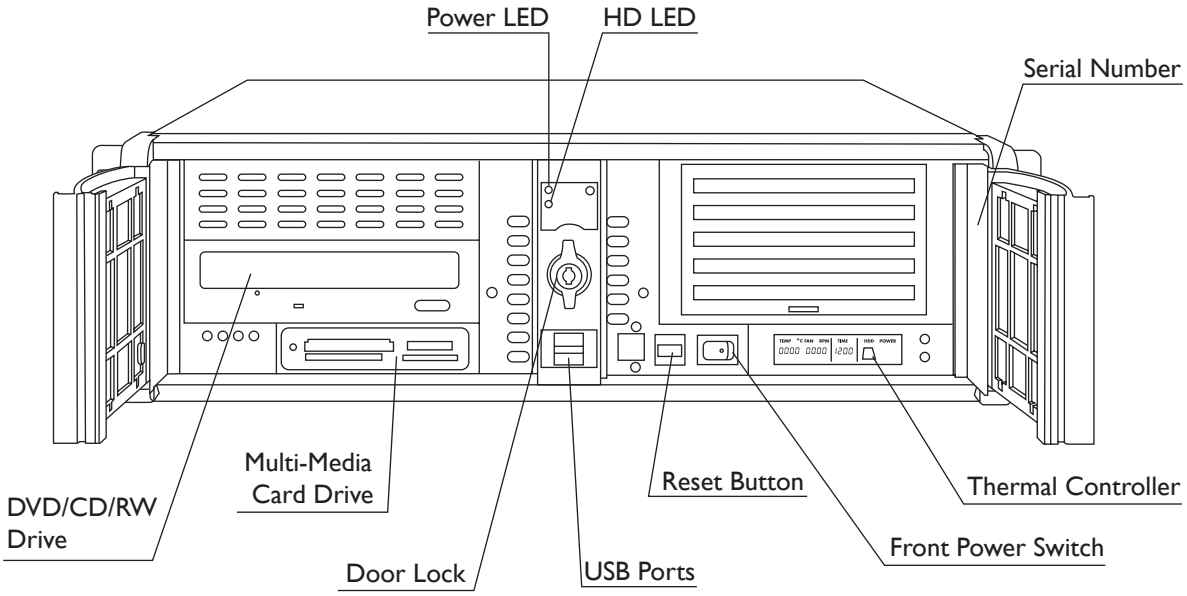


Figure 1.0 Front View Spectral RM5100 and RM7100

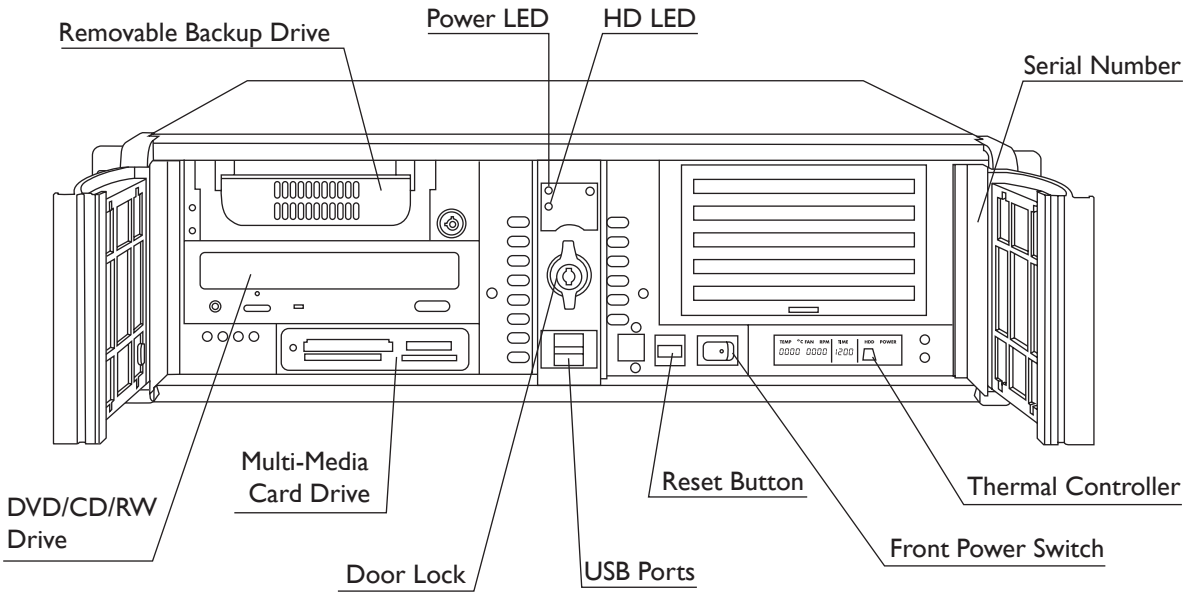


Figure 1.1 Front View Spectral RM7200 and RM7400

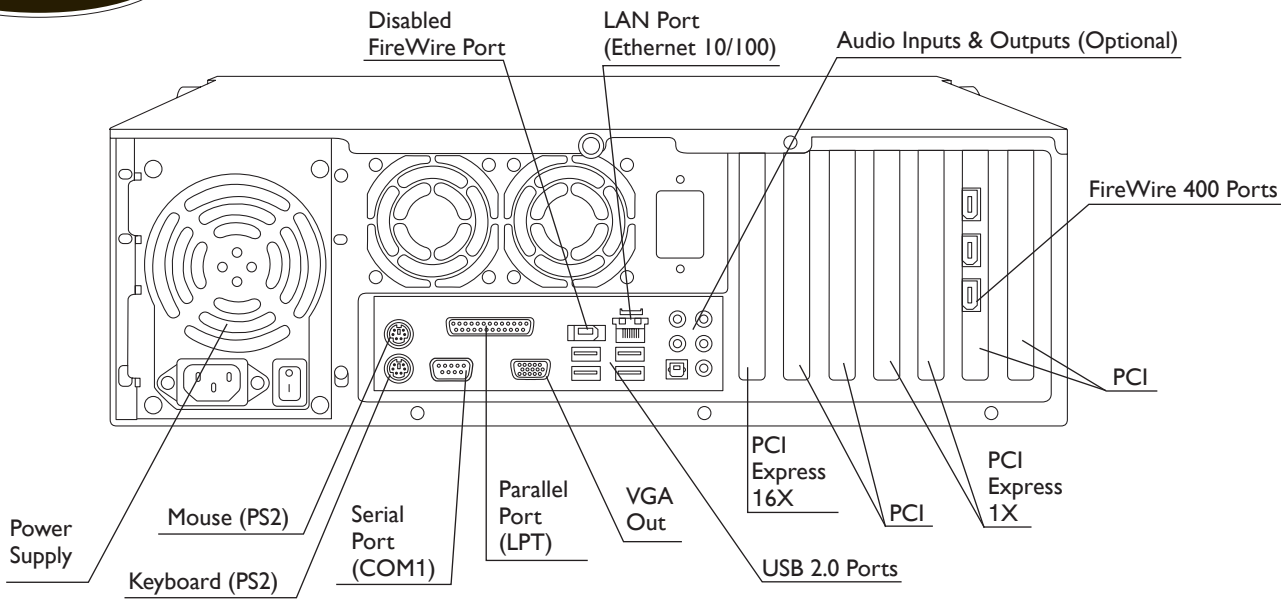


Figure 1.2 Back View Spectral RM5100

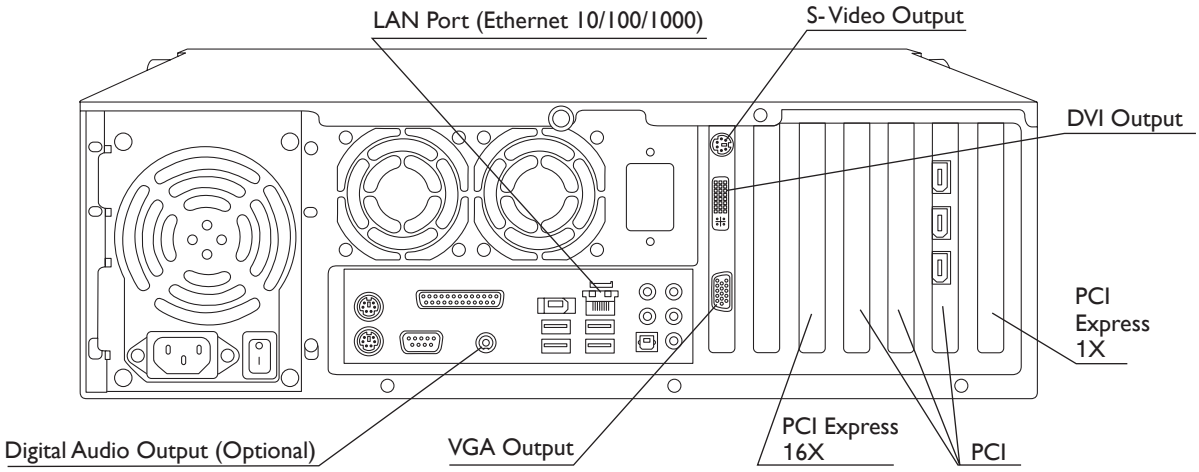


Figure 1.3 Back View Spectral RM7100, RM7200, RM7400 with Intel Processors

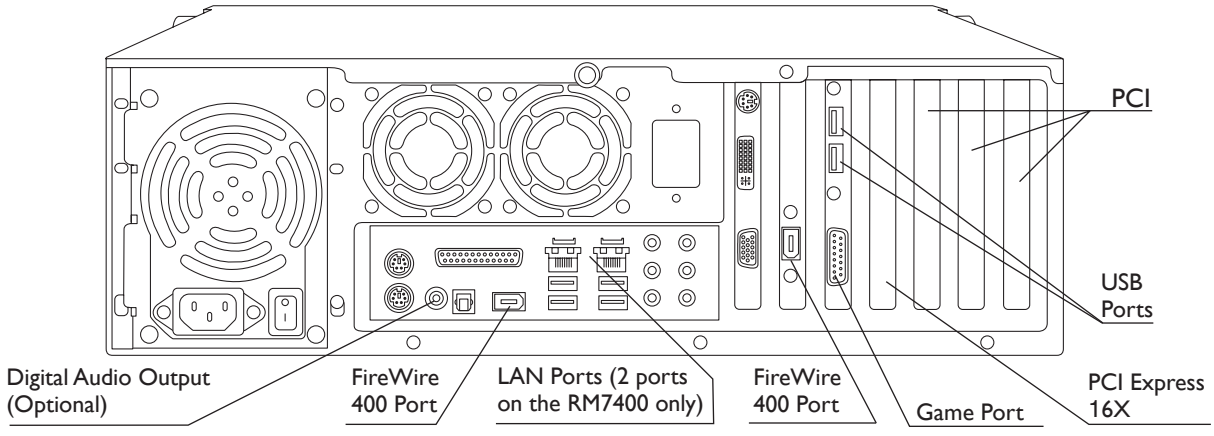


Figure 1.4 Back View Spectral RM7100, RM7200, RM7400 with AMD Processors

Setting Up Your System

CAUTION: Do not place the computer near or above a radiator or heating vent. Keep cabinet or rack well ventilated and do not place in any area exposed to rain or water. Be careful not to spill liquid of any kind on or into the computer.

When You First Open the Box

Before setting up your computer or components, please inspect all items for any damage that may have accidentally occurred during shipment. Please report any issues to the dealer or contact customer service at **(818) 981-3101**.

Where to Place Your Computer

Your computer is designed to be rack mounted in a location that will allow adequate cooling and ventilation. Make sure ventilation openings are never obstructed to ensure reliable operation and to protect the computer from overheating. Avoid exposing your computer to dirt, water, and excessive dust.

Keyboard & Mouse

Connecting Your Keyboard

1. Locate the purple PS/2 port on the back of the chassis.
2. Properly orient the keyboard's PS/2 connector with this port and gently push until the connector is fully inserted. Do not force the connector into the port.

If you have a USB keyboard, insert the USB connector into any available USB port at the back or front of the chassis.

Connecting Your Mouse

1. Locate the green PS/2 port on the back of the chassis.
2. Properly orient the keyboard's PS/2 connector with this port and gently push until the connector is fully inserted. Do not force the connector into the port.

PS/2 Ports have designated colors for easy identification.

Monitors

Check to be sure that you have received a power cord and a signal cable with your monitor.

Reminder: Some monitors may require a DVI Adapter. Check your monitor's owner's manual.

Connecting an Analog Monitor

1. Turn off your computer.
2. Connect one end of the monitor's signal cable to the video card's 15-pin D-Sub VGA connector, located on the back of the chassis.
3. Connect the other end of the signal cable to the monitor's 15-pin D-Sub VGA connector located at the back of the monitor.
4. Secure the connections by tightening the two fasteners at each end of the signal cable.
5. Connect one end of the power cord to the monitor's power connector located at the back of the monitor.
6. Connect the other end of the power cord to a grounded three-prong power strip or wall outlet.
7. Turn on your computer.

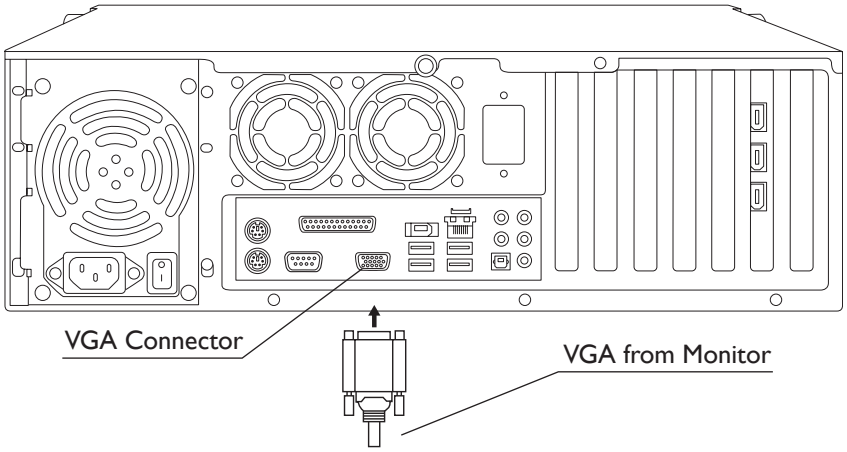


Figure 2.0 – Connecting RM5100 to a Single Analog Monitor

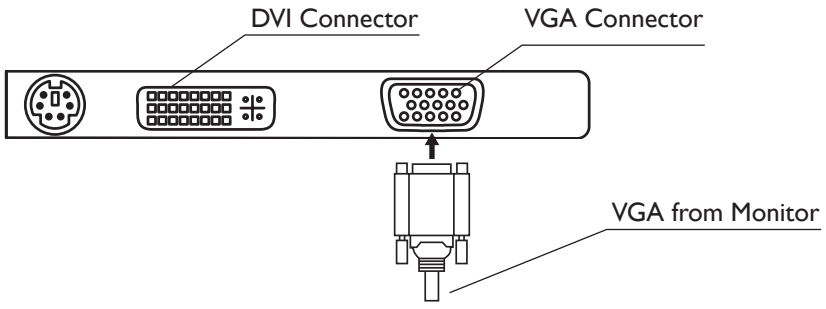


Figure 2.1 – Connecting to a Single Analog Monitor

Connecting a Digital Monitor

1. Turn off your computer.
2. Connect one end of the monitor's signal cable to the video card's DVI connector located on the back of your chassis.
3. Connect the other end of the signal cable to the monitor's DVI connector located at the back of the monitor.
4. Secure the connections by tightening the two fasteners at each end of the signal cable.
5. Connect one end of the power cord to the monitor's power connector located at the back of the monitor.
6. Connect the other end of the power cord to a grounded three-prong power strip or wall outlet.
7. Turn on your computer.

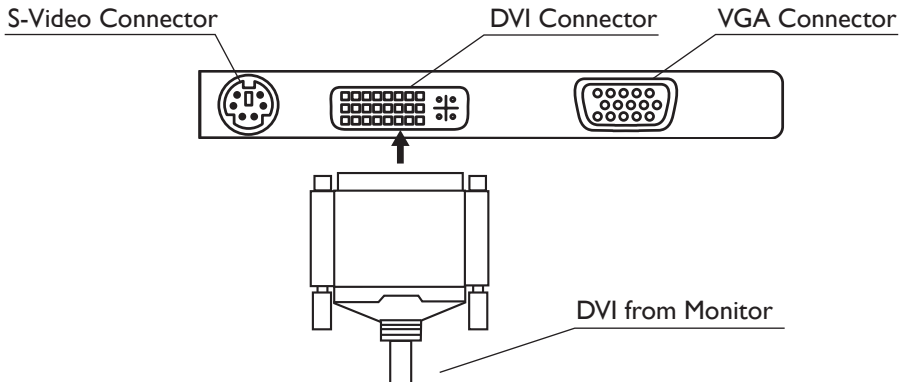


Figure 2.2 – Connecting to a Single Digital Monitor

Connecting Dual Monitors

You can connect multiple monitors to your computer since your video card features multi-monitor support (RM7100, RM7200, and the RM7400 only).

1. Turn off your computer.
2. Connect the DVI-to-VGA adapter or DVI cable to your video card's DVI connector located on the back of the chassis.
3. Connect one end of the first monitor's signal cable to the DVI-to-VGA adapter.
4. Connect other end to the 15-pin D-Sub VGA connector at the back of the monitor.
5. Connect the second monitor's signal cable to the video card's 15-pin D-Sub VGA connector.
6. Connect other end to the 15-pin D-Sub VGA connector at the back of the monitor.
7. Secure the connections by tightening the fasteners at each end of the signal cables (not too tight).
8. Connect the power cord to the 3-prong connector located at the back of the monitor.
9. Plug the power cord to a grounded power strip, uninterruptible power supply, or wall outlet.
10. Repeat steps 8 and 9 for the second monitor. Then turn on your computer.

(Continued on page 7)

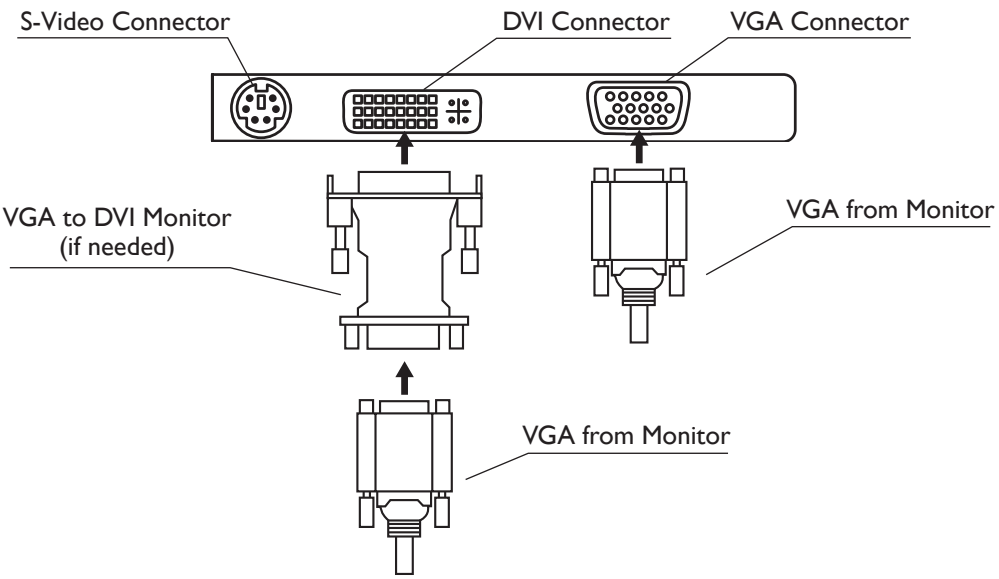


Figure 2.3 – Connecting to Dual Monitors

11. Left-click your Start Menu. Scroll over Settings and left-click the Control Panel.
12. When the Control Panel opens, double-click the Display Properties icon.
13. When the Display Properties dialog box appears, click the Settings tab.
14. On the Settings tab, change the Display pull-down menu to the second monitor.
15. Now, check the box marked "Extend my Windows desktop onto this monitor."
16. Hit the Apply button when you've finished making the changes.
Note: The S-Video Connector can also be used as the second monitor video output.

Connecting Quad Monitors

The RM7100 and higher can accommodate a second PCI Express video card, allowing unprecedented graphics speed with four monitors.

Thermal Controller

CAUTION: Do not attempt to install or repair the Thermal Controller unless you are a trained computer technician. It is easy to break delicate components in the process, which could void your warranty.

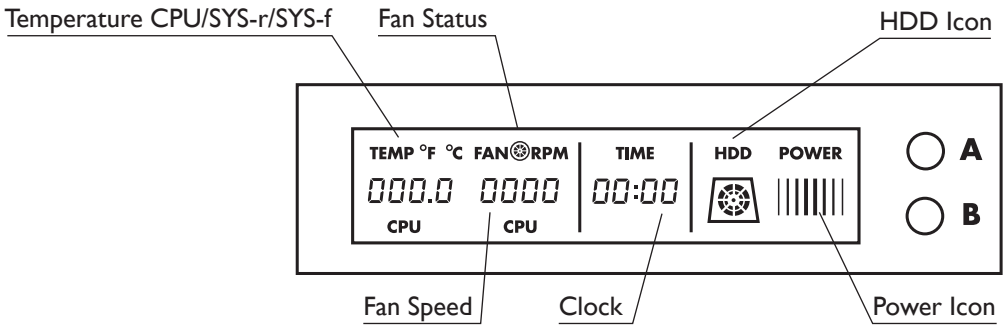


Figure 2.4 – Thermal Controller

Features

- Monitoring temperature of CPU, and System's Rear and Front (SYS-r / SYS-f)
- Speed detection and control of 3 fans
- The alarm sounds in the event of a fan malfunction or overheating

How to setup

1. On the front bezel you can find buttons A and B for setup.

2. Temperature Limits Setup: Press A for 3 seconds to set up maximum temperature limit. Adjust the alarm temperature with button A and B when numbers are flashing. The next setup setting will continue in 5 seconds. The factory default overheating settings are set as CPU= 65 °C, SYS-r (rear) = 55 °C, SYS-f (front) = 50 °C.

3. Time Setup: Press button B for 3 seconds to adjust the time (minute and hour). Use button A and B to select minutes when the number is flashing. Wait 3 seconds for hour setup. Setup mode will terminate if left untouched over 3 seconds.

4. Temperature Type Selection: Press both button A and B to select °F or °C.

5. Alarm: An audible alarm will beep for 20 seconds in an overheat condition or if any fan speed is lower than 600rpm. Fan RPM and Temperature digits will keep flashing until the problem is solved.

Connecting a USB or FireWire Device

Plug the USB or FireWire device into its respective port on your computer. Windows XP will detect the device and attempt to install the appropriate driver automatically. In some cases, Windows may require a driver. This driver is located on the software CD that is included with the device. Otherwise, Windows will automatically install the device with the driver in its database. We suggest updating the driver at a later date for maximum performance. For further information, please refer to your device's operating manual. For the RM5100 and RM7100, only use the three FireWire ports located on the PCI card.

Your Multi-Media Card Reader

The card reader has four slots for various types of media cards.

- •CF Compact Flash
- •Microdrive
- •SM Smart Media
- •SD Secure Digital
- •MMC Multi-Media Card
- • Memory Stick

Your Removable Backup Hard Drive (RM7200 and RM7400 Only)

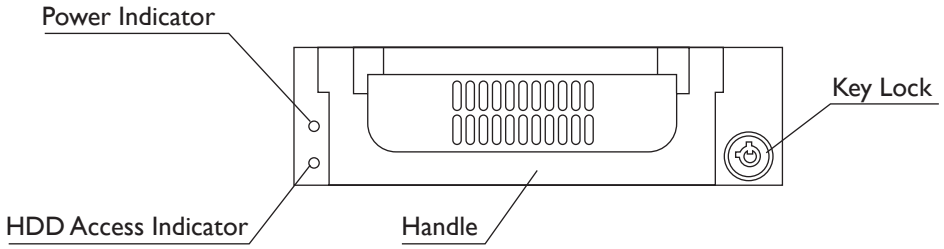


Figure 2.5 – Removable Hard Drive

Removing the Rack from the Carrier Body

Make sure that the computer is not accessing the Removable Hard Drive. Insert the miniature key provided into the keyhole and turn the key clockwise to shut down and unlock the hard drive. Wait 20 to 30 seconds for the hard drive to spin down. Lift up the handle and pull outward to remove the carrier from the receiving frame.

Inserting a Carrier into the Receiving Frame

Insert the carrier in the receiving frame and push it in all the way as far as it will go. Fold down the handle and turn the key counter-clockwise to lock the drive and start it up. Wait 20 to 30 seconds for the hard drive to spin up before accessing it from the computer.

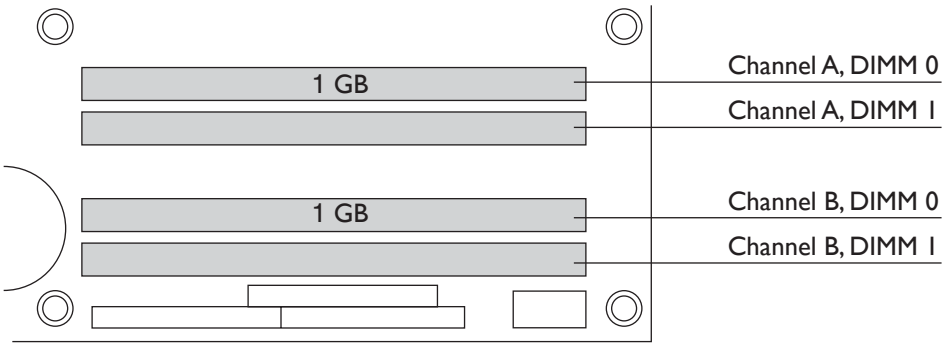
Upgrading the RAM

Please contact Spectral Computers if you want to upgrade the RAM of your computer. All RAM chips must be matched and certified by Spectral Computers to function properly. Use of a different brand or unmatched memory chips may result in system malfunction.

Spectral Computers use dual channel memory. There are four DIMM sockets, two for Channel A and two for Channel B. The configuration of the DIMMs in Channel B sockets should always be identical to the configuration in Channel A sockets.

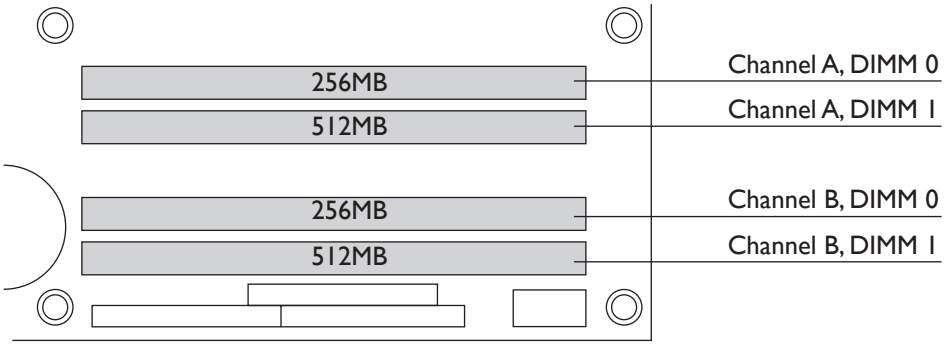
Using Two DIMMS

The DIMM 0 (blue) sockets of both channels are populated with identical DIMMs.



Using Four DIMMs

The combined capacity of the two DIMMs in Channel A equals the combined capacity of the two DIMMs in Channel B. Also, the DIMMs are matched between DIMM 0 and DIMM 1 of both channels.



Upgrading to 64-bit Processing

Your new Spectral computer supports 64-bit EMT that can only be utilized by using an operating system that supports 64-bit, such as Windows XP x64 Edition. Also, to take full advantage of the 64-bit execution platform, your application must be written to support 64-bit processing. In addition, any additional hardware being used, such as audio cards, needs to have x64 drivers. Please contact Spectral Computers if you want to upgrade the OS of your computer to x64.

Backing Up Your Files

Backing up protects you from losing important data if the hard drive fails or you accidentally delete files. Your Spectral computer contains two or more hard drives:

- The system drive for the Operating System, system files, programs and settings as well as other documents
- The recording drive (or RAID drives in the RM7200 and RM7400) for Audio data
- The removable hard drive (RM7200 and RM7400 only)

You can backup files from the hard drives to CD-R or DVD-R discs using the onboard optical drive, or to an external USB2 or FireWire drive. On the RM7200 and RM7400, you can also use the removable hard drive for backup and transfers.

You should back up your files regularly and important files should be kept at least in two different places.

For the system drive, we recommend using a software package that can make a full image of your hard drive. The image recovery software will recover the operating system and settings to the state prior to the backup.

The Digital Backup System

CAUTION: The Digital Backup System does not substitute the need to backup on external devices such as DVD/CD media or removable/external hard drives. Its main role is to protect the operating system and installed programs on drive C: and it does not back up any data residing on other hard drives such as the recording hard drive. Also it does not protect the user from loss of data due to a system hard drive failure, since the backup data resides on the system drive in a hidden partition.

Digital Backup System is an innovative real-time system restoration utility. Once installed, the Digital Backup System continually monitors and keeps a complete record of all activities on the system hard drive. The Digital Backup System gives you the power to recover lost data after a system crash, virus attack, faulty software installation, accidental file deletion or unintentional formatting of the hard disk. In merely a few minutes, if not seconds, all of the contents of your hard disk can be restored back to a point in time when your computer was functioning properly. The Digital Backup System is different from general-purpose backup software, using a unique real-time incremental backup technology, that takes only 5 to 10 percent of the hard disk space. It can be set to automatically back up the system once every hour or day, or at each system start-up.

Features

100% Protection: Allows you to instantly recover from accidental disk formatting, file deletion, virus attacks or system crash. The Digital Backup System offers complete system protection, 24 hours a day, 365 days a year.

Kills Viruses, Rescues Files: Infected or damaged files can be rescued in seconds by reversing the hard drive to a previous backup point.

Only a Fraction of Disk Space Used: Digital Backup System uses a unique real-time incremental backup technology, taking up only 5 to 10 percent of the hard disk space.

Password Protection: Using the Digital Backup System, you can lock your system at the DOS level. No unauthorized person can use your computer.

Personalize and Secure Complete Backup: Name a Backup Point and lock it to prevent accidental removal.

Complete Backup Points: Stores a permanent copy of your hard disk, so even after years, you can restore your system back to the day you first installed the Digital Backup System.

Easy to Use: Now you can easily restore a computer back to working order without having to call technical support.

Intelligent Data Integrity Checking: Checks the data integrity of the latest Incremental Backup Point and marks it as "untrusted" if any inconsistencies are found.

Virtually Unlimited Backup Points: The Digital Backup System can set up unlimited Incremental Backup Points, limited only by the hard disk space available.

The Digital Backup System Manager in Windows

Quick Start

Select Start on the Windows taskbar, then Programs > Digital Backup System > Digital Backup System or double-click the Digital Backup System icon on the desktop to launch the Digital Backup System Quick Start guide.

Digital Backup Quick Start
Backup System
Quick Backup - Quickly backs-up your hard drive protecting your data. Create a new Incremental Backup Point.
Complete Backup - Saves all your current data and refreshes your Complete Backup Point. We recommend that you close all other applications at this time.
Restore your computer - Rolls back your entire disk to the last saved quick backup, restoring your operating system, applications, and files.
File-level Restore - File Recovery lets you retrieve previous versions of files that have been deleted, changed or overwritten, without doing an entire disk rollback.
Advanced
Cancel
Help

Quick Backup

The Quick Backup option is used for quickly creating a new Incremental Backup point to backup your hard drive and protect your data.

Click the *Quick Backup* button. The Digital Backup System will lock the hard drive. If any program is currently writing to the hard disk, the Digital Backup System will stop creating the Backup Point. If your computer locks up during this period, restart it manually and try again.
Note: The Digital Backup System does not create new Backup Points if it is unable to lock your hard drive. Close ALL applications when you create a new Backup Point.

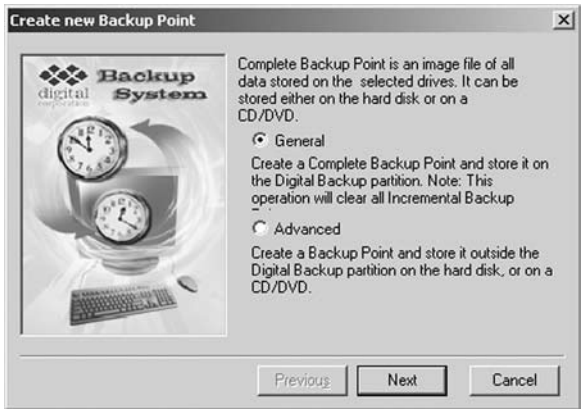
Select *Close* when you have successfully created a new Backup Point. In this step you will not need to restart your PC.

It is strongly recommended you create a Quick backup point prior to installing any new software or hardware. By doing so, you could reverse in seconds any problems arising from the installation. It is also highly recommended you reboot the computer prior to creating a backup point.

Complete Backup

The Complete Backup option allows users to save all data on the hard disk as a Complete Backup Point. This feature will overwrite the factory backup with your own backup if there is enough space.

Click the *Complete Backup* button to open the dialog box shown below.


Create new Backup Point
Backup System
Complete Backup Point is an image file of all data stored on the selected drives. It can be stored either on the hard disk or on a CD/DVD.
General
Create a Complete Backup Point and store it on the Digital Backup partition. Note: This operation will clear all Incremental Backup
Advanced
Create a Backup Point and store it outside the Digital Backup partition on the hard disk, or on a CD/DVD.
Previous
Next
Cancel

There are two different kinds of Complete Backup Points: General Complete Backup Point and Advanced Complete Backup Point.

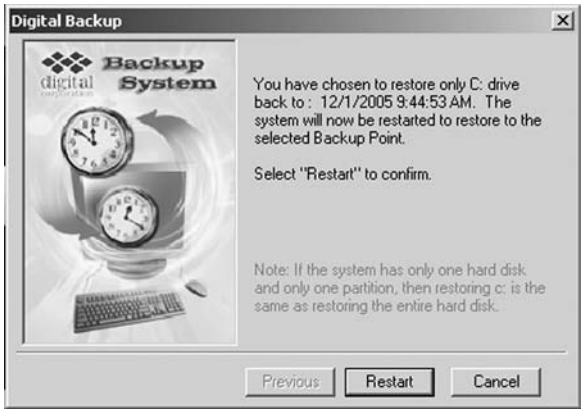
The *General Backup Point* can back up the first hard disk that is protected by the Digital Backup System only. It is located in the Digital Backup System partition and only one General Backup Point is allowed to be created.

The *Advanced Complete Backup Point* is not supported on this version. Always select General.

Restoring Your Computer

CAUTION: When recovering from a backup point, all changes made to the system drive since the backup point will be erased when recovering. We strongly recommend moving new data created on the system drive after the backup point to a different hard drive or to a DVD prior to recovering.

Choosing this option, you can quickly revert your computer to the most recently created Incremental Backup Point. Click the *Restore Your Computer* button. The restoration dialog box will appear and ask you to choose whether to restart your computer.

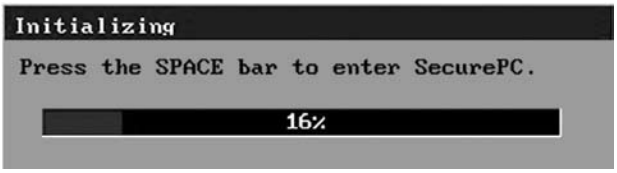

Digital Backup
Backup System
digital
You have chosen to restore only C: drive back to : 12/1/2005 9:44:53 AM. The system will now be restarted to restore to the selected Backup Point.
Select "Restart" to confirm.
Note: If the system has only one hard disk and only one partition, then restoring c: is the same as restoring the entire hard disk.
Previous
Restart
Cancel

The Digital Backup System Manager in Real Mode

(Proprietary, non-Windows, independent of Windows operating system)

Activating the Digital Backup System Manager

To activate Digital Backup System program, press the *Space Bar* after system POST (Power-on-self-testing, before Windows begins to load while the pop-up window is displayed.)



File-level Restore

This function is not supported in this version.

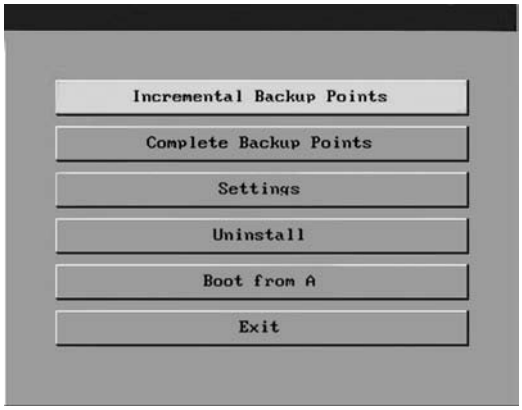
Navigating in the Digital Backup System Manager

1. To activate the Digital Backup System Manager program, press the *Space Bar* after system POST (Power-on-self-testing), but before Windows begins to load.

2. Enter your password and press *Enter* to access the main screen of the Digital Backup System Manager. (If no password has been entered, the password menu will not be shown.)

3. Navigating in the Digital Backup System Manager DOS screen
- •Use the *Tab* key to move through the screen selections. The selected option will be highlighted.
- •Use the *Down Arrow* key to highlight Backup Points.
- •To make a selection or change an option, press *Enter*.

4. Using Digital Backup System Manager



Each of the Digital Backup System Manager buttons is in the following pages.

Incremental Backup Points

This option displays a list of all Incremental Backup Points. The first available Backup Point will be the time at which Digital Backup System was last loaded onto your system. From here you can choose whether to restore the entire hard drive or the C: drive only.

Using the arrow key, move to an appropriate Backup Point and press *Enter* to complete the selection. Tab down to *OK* and press *Enter* to activate the Digital Backup System restoration process. A complete restore can take from 20 seconds up to 10 minutes, depending on the number of files affected. Once the system has restarted, your PC will be restored to the chosen restoration point. All file modifications and additions made after the Backup Point date will be cleared and any files removed or damaged on your system that existed prior the creation of the Backup Point will be restored.

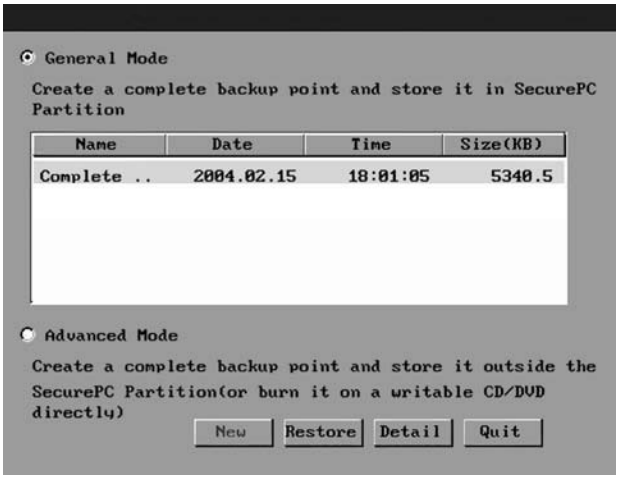
Note: If you choose Clear All Backup Points *and press* OK*, once the system has restarted, all original existing Incremental Backup Points will be cleared and your system will create a new Incremental Backup Point automatically. (The original Complete Backup Point will still exist. Only one Complete Backup Point may be created in Digital Backup System.)*

Complete Backup Points

There are two options in the Complete Backup Points dialog: General Mode and Advanced.

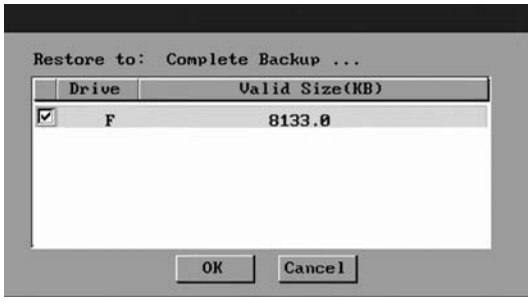
Reverting a Complete Backup Point

You can revert to a Complete Backup Point, which is created in General Mode, by selecting the General Mode radio button.



Using the arrow key, move to an appropriate Complete Backup Point and press *Enter* to complete the selection. Tab down to *OK* and press *Enter* to activate the Digital Backup System restoration process.

The *Detail* page shows detailed information on the selected Complete Backup Point.

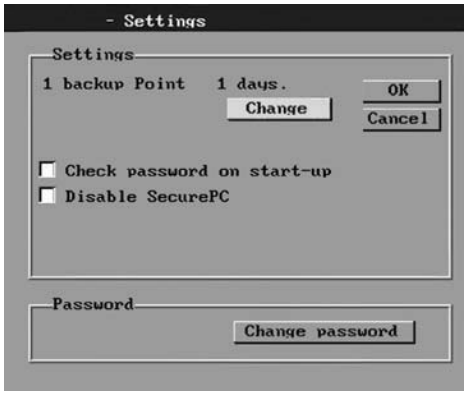


Creating/Restoring an advanced Complete Backup Point in Real Mode

Not supported in this version.

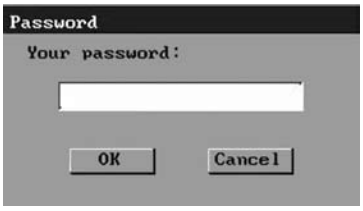
Digital Backup System Schedule Settings

The Digital Backup System Settings window provides several options to manage your backup strategy.



Settings › Change: This function allows you to set a time period for the automatic creation of Backup Points. Real Mode can set a Backup Point period between one and 30 days for each Backup Point.

Password › Changing Password: The options setup provides a convenient way of Enabling or Disabling Digital Backup System and maintaining your password.



Uninstall

This option allows you to completely remove the Digital Backup System from your system. All disk space held by Digital Backup System will be released.

CAUTION: Choosing this function will completely remove the backup system from your computer, and could cause your windows to need reloading. Also, your user license does not include an installation disk which would allow you to reload the Digital Backup System. This backup system can only be shipped pre-installed on a hard drive with a new computer system.

Boot from A: not available

Exit

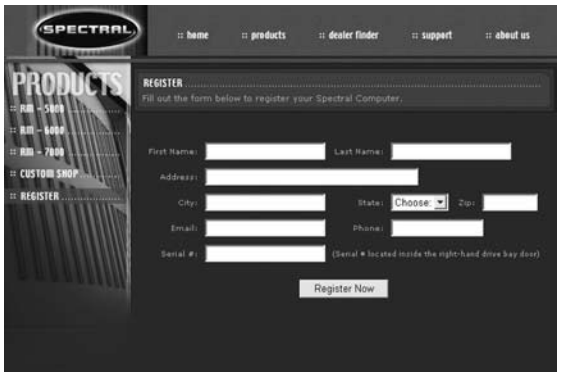
This option allows you to exit from the Digital Backup System Manager program.

Registering Your PC

Please take a moment to register your new Spectral PC. Registration allows you to take full advantage of Technical Support, notice of Spectral proprietary software patches, notification of new products and additional benefits that are not extended to non-registered owners. The registration process takes just a few minutes on the Internet, and your personal information will never be sold or used for marketing purposes.

To register your Spectral PC, please go to the Spectral website: *www.spectralcomputers.com*.

Click on the "Product Registration" icon on the product page.



When the registration form appears, fill out the information as appropriate. All spaces must be completed in order to complete the registration process.

When asked for the Spectral Registration Number, please open your Spectral PC's right door. A sticker will be affixed to the inside of the door and will have your registration number printed on it. Type in this number as requested on the online registration form.

When the form is complete, click on the "Submit" button to finish the process.

Congratulations! You are now a fully-registered Spectral Owner!

Warranty Information

Limited Warranty

Subject to the limitations set forth below, Digital Corporation hereby represents and warrants that the components of SPECTRAL computers shall be free from defects in workmanship and materials, subject to normal use and service, for a period that is one year from the date of shipment of the SPECTRAL computers (such periods being hereinafter referred to as the "Warranty Period"). The sole and exclusive remedy of the foregoing limited warranty shall be limited to the repair or replacement of any defective or non-conforming component exclusively by Digital Corporation.

Any and all warranties set forth above or otherwise made by Digital Corporation are conditioned upon proper use of the SPECTRAL computers in the application for which it is intended and shall not apply to any SPECTRAL computer (i) that has been modified in any respect without the prior written consent of Digital Corporation, (ii) that has been installed, serviced or repaired by anyone other than Digital Corporation and/or Digital Corporation's authorized personnel, without the prior written approval of Digital Corporation, (iii) has been subject to unusual physical or electrical stress, or (iv) that has been damaged by reason of accident, neglect, misuse, air conditioning, humidity control, transportation, extreme heat or cold temperature, failure of electrical power, inappropriate operating environment or conditions, or failure to comply with applicable operating and maintenance instructions or any cause other than ordinary use. Digital Corporation hereby agrees to provide technical support limited to hardware at no cost during the Warranty Period. NEITHER DIGITAL CORPORATION NOR ANY OF ITS RESPECTIVE LICENSORS, OR AUTHORIZED DEALERS WARRANT THAT THE SPECTRAL COMPUTERS WILL OPERATE UNINTERRUPTED OR ERROR FREE. CUSTOMERS ARE SOLELY RESPONSIBLE FOR THE SELECTION OF THE PRODUCTS AND SOFTWARE TO ACHIEVE INTENDED RESULTS FOR PARTICULAR APPLICATIONS.

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Note: Spectral Computers are manufactured and serviced by Digital Corporation.

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